Full wwPDB X-ray Structure Validation Report ⓘ

Oct 16, 2023 – 01:42 AM EDT

PDB ID	:	8EE1
Title	:	KS-AT didomain from module 2 of the 6-deoxyerythronolide B synthase in complex with antibody fragment AA5
Authors	:	Cogan, D.P.; Brodsky, K.L.; Guzman, K.M.; Mathews, I.I.; Khosla, C.
Deposited on	:	2022-09-06
Resolution	:	2.70 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:

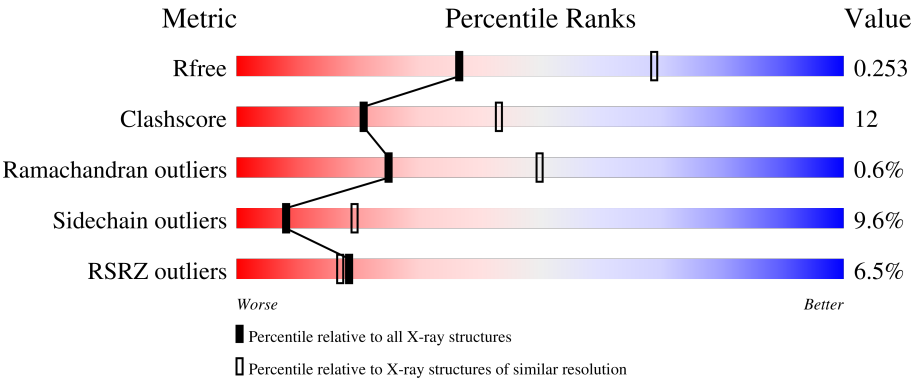
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.70 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	932	3% 69% 19% · 10%
1	D	932	5% 66% 22% · 9%
2	B	249	7% 50% 32% · 15%
2	G	249	8% 37% 25% · 34%
3	C	231	10% 59% 27% · 11%

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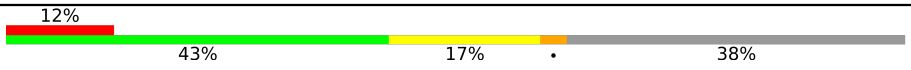
Mol	Chain	Length	Quality of chain
3	H	231	

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 17757 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called 6-deoxyerythronolide B synthase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	840	Total	C	N	O	S	0	0	0
			6094	3800	1100	1173	21			
1	D	846	Total	C	N	O	S	0	0	0
			6105	3802	1094	1188	21			

There are 86 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	expression tag	UNP Q5UNP6
A	2	ALA	-	expression tag	UNP Q5UNP6
A	3	SER	-	expression tag	UNP Q5UNP6
A	4	THR	-	expression tag	UNP Q5UNP6
A	5	ASP	-	expression tag	UNP Q5UNP6
A	6	SER	-	expression tag	UNP Q5UNP6
A	7	GLU	-	expression tag	UNP Q5UNP6
A	8	LYS	-	expression tag	UNP Q5UNP6
A	9	VAL	-	expression tag	UNP Q5UNP6
A	10	ALA	-	expression tag	UNP Q5UNP6
A	11	GLU	-	expression tag	UNP Q5UNP6
A	12	TYR	-	expression tag	UNP Q5UNP6
A	13	LEU	-	expression tag	UNP Q5UNP6
A	14	ARG	-	expression tag	UNP Q5UNP6
A	15	ARG	-	expression tag	UNP Q5UNP6
A	16	ALA	-	expression tag	UNP Q5UNP6
A	17	THR	-	expression tag	UNP Q5UNP6
A	18	LEU	-	expression tag	UNP Q5UNP6
A	19	ASP	-	expression tag	UNP Q5UNP6
A	20	LEU	-	expression tag	UNP Q5UNP6
A	21	ARG	-	expression tag	UNP Q5UNP6
A	22	ALA	-	expression tag	UNP Q5UNP6
A	23	ALA	-	expression tag	UNP Q5UNP6
A	24	ARG	-	expression tag	UNP Q5UNP6
A	25	GLN	-	expression tag	UNP Q5UNP6

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Chain	Residue	Modelled	Actual	Comment	Reference
A	26	ARG	-	expression tag	UNP Q5UNP6
A	27	ILE	-	expression tag	UNP Q5UNP6
A	28	ARG	-	expression tag	UNP Q5UNP6
A	29	GLU	-	expression tag	UNP Q5UNP6
A	30	LEU	-	expression tag	UNP Q5UNP6
A	31	GLU	-	expression tag	UNP Q5UNP6
A	32	SER	-	expression tag	UNP Q5UNP6
A	922	ALA	-	expression tag	UNP Q5UNP6
A	923	ALA	-	expression tag	UNP Q5UNP6
A	924	ALA	-	expression tag	UNP Q5UNP6
A	925	LEU	-	expression tag	UNP Q5UNP6
A	926	GLU	-	expression tag	UNP Q5UNP6
A	927	HIS	-	expression tag	UNP Q5UNP6
A	928	HIS	-	expression tag	UNP Q5UNP6
A	929	HIS	-	expression tag	UNP Q5UNP6
A	930	HIS	-	expression tag	UNP Q5UNP6
A	931	HIS	-	expression tag	UNP Q5UNP6
A	932	HIS	-	expression tag	UNP Q5UNP6
D	1	MET	-	expression tag	UNP Q5UNP6
D	2	ALA	-	expression tag	UNP Q5UNP6
D	3	SER	-	expression tag	UNP Q5UNP6
D	4	THR	-	expression tag	UNP Q5UNP6
D	5	ASP	-	expression tag	UNP Q5UNP6
D	6	SER	-	expression tag	UNP Q5UNP6
D	7	GLU	-	expression tag	UNP Q5UNP6
D	8	LYS	-	expression tag	UNP Q5UNP6
D	9	VAL	-	expression tag	UNP Q5UNP6
D	10	ALA	-	expression tag	UNP Q5UNP6
D	11	GLU	-	expression tag	UNP Q5UNP6
D	12	TYR	-	expression tag	UNP Q5UNP6
D	13	LEU	-	expression tag	UNP Q5UNP6
D	14	ARG	-	expression tag	UNP Q5UNP6
D	15	ARG	-	expression tag	UNP Q5UNP6
D	16	ALA	-	expression tag	UNP Q5UNP6
D	17	THR	-	expression tag	UNP Q5UNP6
D	18	LEU	-	expression tag	UNP Q5UNP6
D	19	ASP	-	expression tag	UNP Q5UNP6
D	20	LEU	-	expression tag	UNP Q5UNP6
D	21	ARG	-	expression tag	UNP Q5UNP6
D	22	ALA	-	expression tag	UNP Q5UNP6
D	23	ALA	-	expression tag	UNP Q5UNP6
D	24	ARG	-	expression tag	UNP Q5UNP6

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Chain	Residue	Modelled	Actual	Comment	Reference
D	25	GLN	-	expression tag	UNP Q5UNP6
D	26	ARG	-	expression tag	UNP Q5UNP6
D	27	ILE	-	expression tag	UNP Q5UNP6
D	28	ARG	-	expression tag	UNP Q5UNP6
D	29	GLU	-	expression tag	UNP Q5UNP6
D	30	LEU	-	expression tag	UNP Q5UNP6
D	31	GLU	-	expression tag	UNP Q5UNP6
D	32	SER	-	expression tag	UNP Q5UNP6
D	922	ALA	-	expression tag	UNP Q5UNP6
D	923	ALA	-	expression tag	UNP Q5UNP6
D	924	ALA	-	expression tag	UNP Q5UNP6
D	925	LEU	-	expression tag	UNP Q5UNP6
D	926	GLU	-	expression tag	UNP Q5UNP6
D	927	HIS	-	expression tag	UNP Q5UNP6
D	928	HIS	-	expression tag	UNP Q5UNP6
D	929	HIS	-	expression tag	UNP Q5UNP6
D	930	HIS	-	expression tag	UNP Q5UNP6
D	931	HIS	-	expression tag	UNP Q5UNP6
D	932	HIS	-	expression tag	UNP Q5UNP6

- Molecule 2 is a protein called AA5 antibody heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	212	Total	C	N	O	S	0	0	0
			1583	1005	261	312	5			
2	G	165	Total	C	N	O	S	0	0	0
			1260	800	213	244	3			

- Molecule 3 is a protein called AA5 antibody light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	205	Total	C	N	O	S	0	0	0
			1562	973	265	319	5			
3	H	144	Total	C	N	O	S	0	0	0
			1079	672	180	223	4			

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	40	Total	O	0	0
			40	40		

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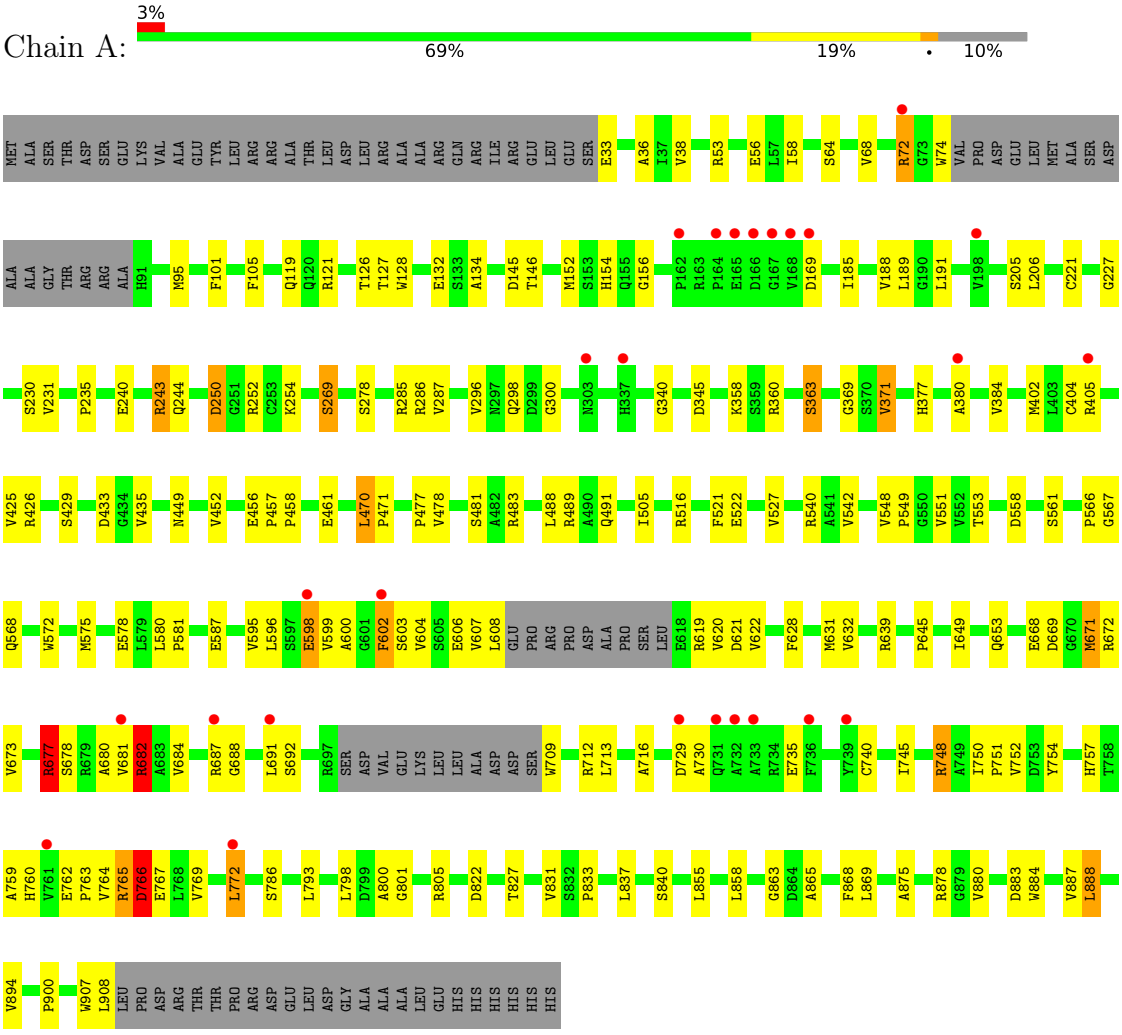
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total O 1 1	0	0
4	C	4	Total O 4 4	0	0
4	D	29	Total O 29 29	0	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

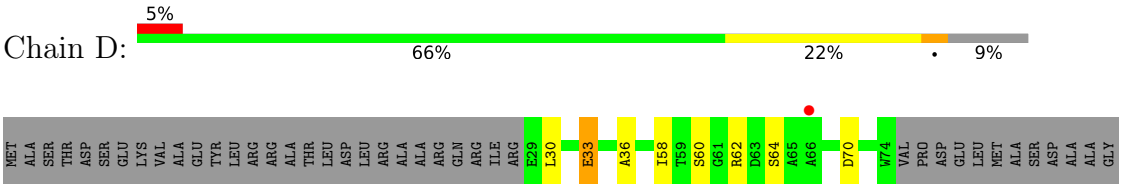
• Molecule 1: 6-deoxyerythronolide B synthase

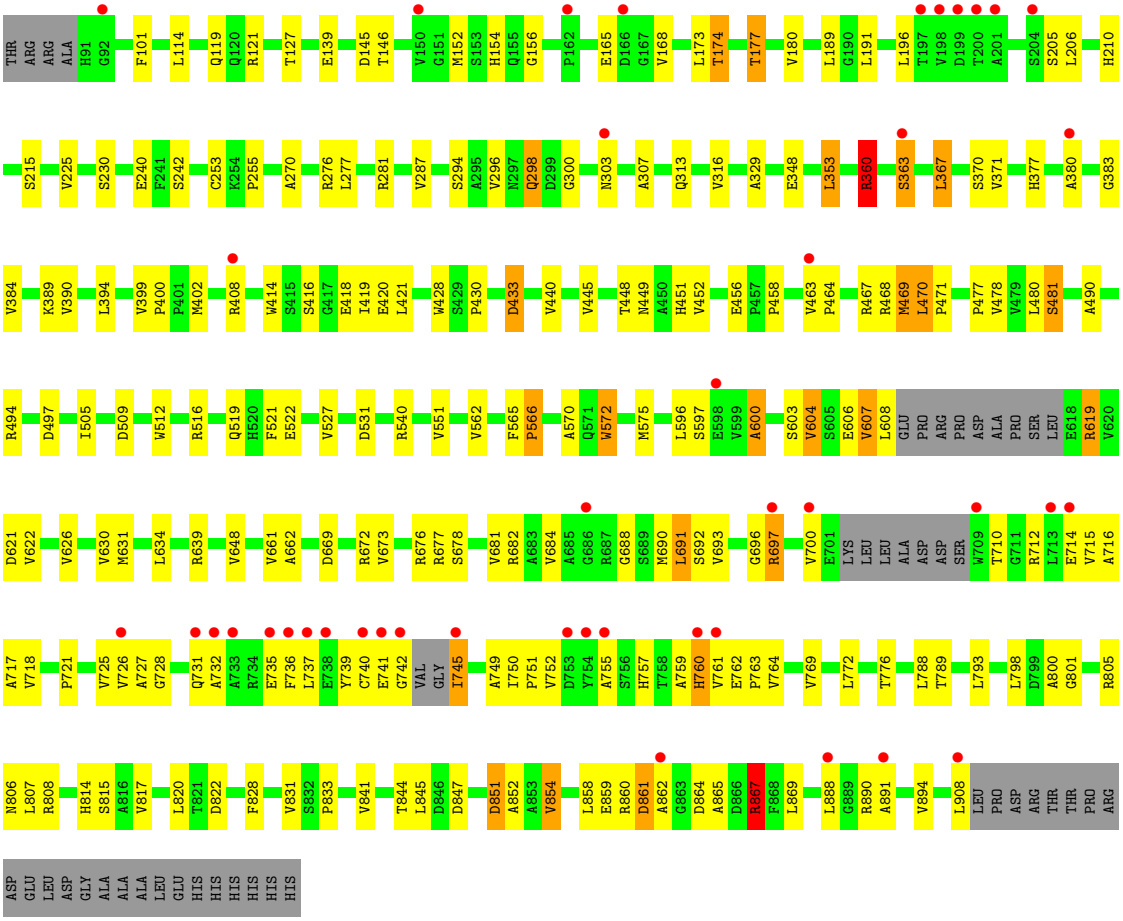
Chain A:



• Molecule 1: 6-deoxyerythronolide B synthase

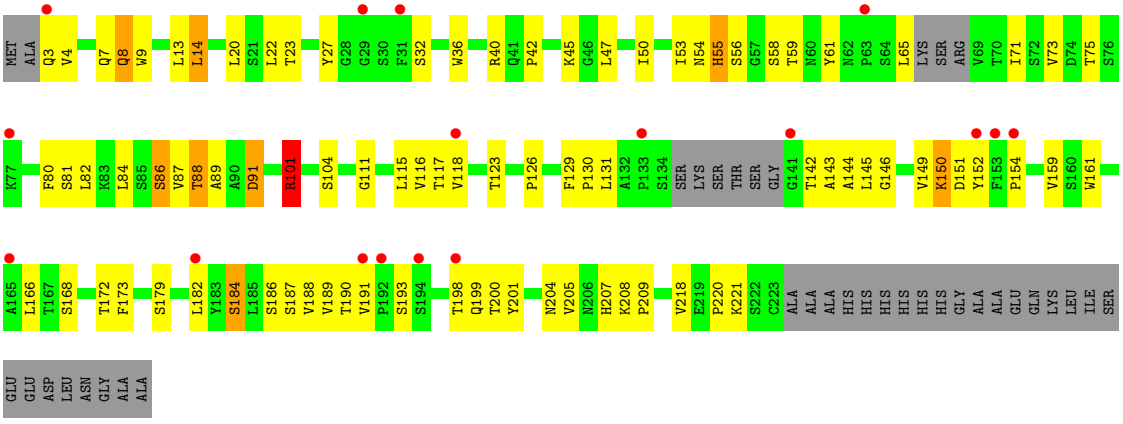
Chain D:





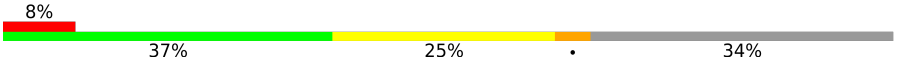
• Molecule 2: AA5 antibody heavy chain

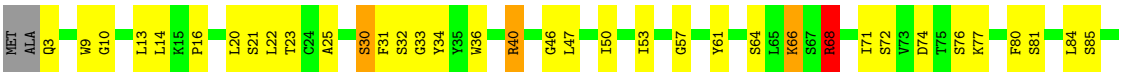
Chain B:

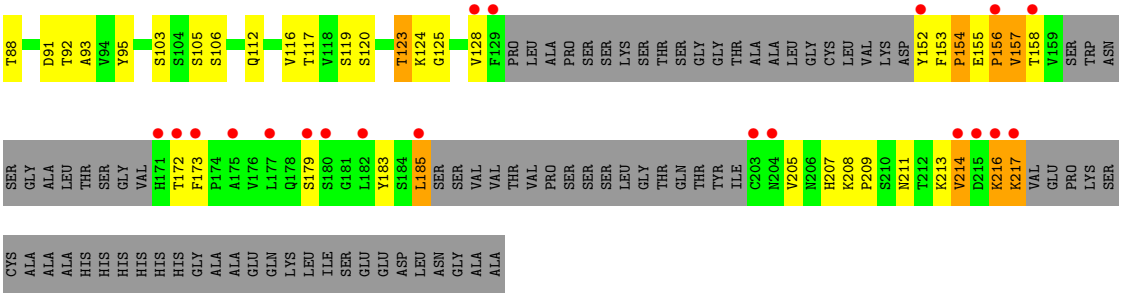


• Molecule 2: AA5 antibody heavy chain

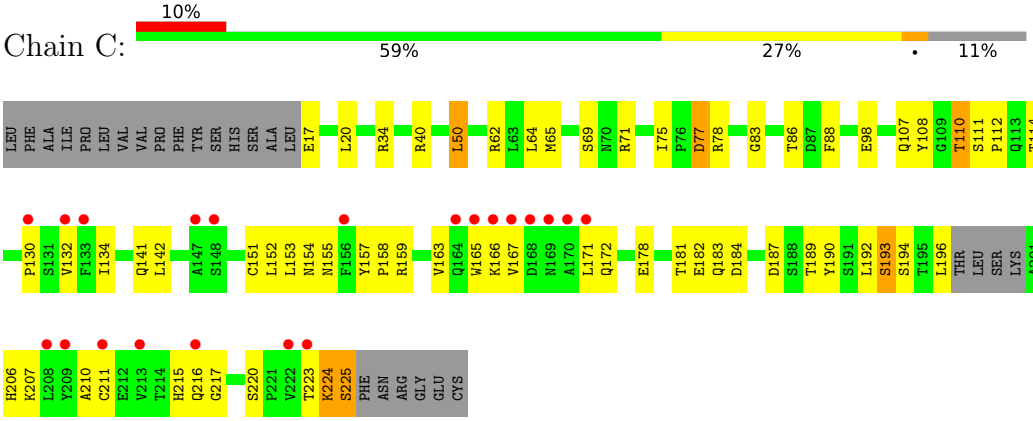
Chain G:



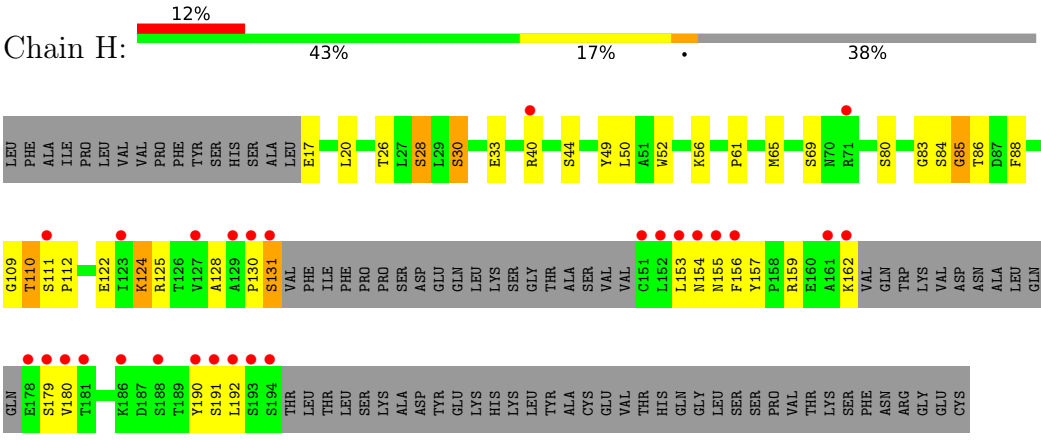




• Molecule 3: AA5 antibody light chain



• Molecule 3: AA5 antibody light chain



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	249.37Å 252.44Å 63.92Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	39.62 – 2.70 39.62 – 2.70	Depositor EDS
% Data completeness (in resolution range)	98.3 (39.62-2.70) 92.0 (39.62-2.70)	Depositor EDS
R_{merge}	0.16	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.43 (at 2.69Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.225 , 0.254 0.226 , 0.253	Depositor DCC
R_{free} test set	5514 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	68.1	Xtriage
Anisotropy	0.235	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 54.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.008 for k,h,-l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	17757	wwPDB-VP
Average B, all atoms (Å^2)	80.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.34% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	A	0.54	0/6215	0.72	0/8470
1	D	0.55	0/6222	0.72	0/8483
2	B	0.51	0/1624	0.67	0/2217
2	G	0.50	0/1292	0.67	0/1756
3	C	0.48	0/1596	0.65	0/2169
3	H	0.51	0/1101	0.71	0/1496
All	All	0.53	0/18050	0.71	0/24591

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	5
1	D	0	2
2	B	0	1
2	G	0	1
All	All	0	9

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (9) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	243	ARG	Sidechain
1	A	677	ARG	Sidechain
1	A	682	ARG	Sidechain
1	A	72	ARG	Sidechain
1	A	748	ARG	Sidechain

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Mol	Chain	Res	Type	Group
2	B	101	ARG	Sidechain
1	D	360	ARG	Sidechain
1	D	867	ARG	Sidechain
2	G	68	ARG	Sidechain

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	6094	0	5935	114	0
1	D	6105	0	5918	135	0
2	B	1583	0	1540	57	0
2	G	1260	0	1218	49	0
3	C	1562	0	1487	47	0
3	H	1079	0	1007	34	0
4	A	40	0	0	1	0
4	B	1	0	0	0	0
4	C	4	0	0	1	0
4	D	29	0	0	0	0
All	All	17757	0	17105	424	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 12.

All (424) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:690:MET:HG3	1:D:752:VAL:HG21	1.57	0.85
1:D:619:ARG:HH22	1:D:682:ARG:HH11	1.25	0.85
1:D:604:VAL:HG13	1:D:606:GLU:HG2	1.57	0.84
1:D:353:LEU:HD22	1:D:419:ILE:HD12	1.62	0.81
1:A:298:GLN:HG3	1:A:300:GLY:H	1.48	0.76
1:D:60:SER:HB3	1:D:62:ARG:HG3	1.67	0.76
1:A:887:VAL:HG23	1:A:888:LEU:HD13	1.68	0.76
1:A:516:ARG:HH11	1:A:516:ARG:HG2	1.50	0.76
2:B:61:TYR:HE1	2:B:71:ILE:HG12	1.50	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:61:TYR:CE1	2:B:71:ILE:HG12	2.24	0.73
1:D:298:GLN:HG3	1:D:300:GLY:H	1.52	0.73
1:D:505:ILE:HD11	1:D:894:VAL:HG11	1.70	0.72
3:C:165:TRP:CE2	3:C:196:LEU:HB2	2.24	0.72
3:H:110:THR:HG23	3:H:112:PRO:HD2	1.71	0.72
3:H:83:GLY:HA3	3:H:88:PHE:HA	1.71	0.71
3:C:178:GLU:HG2	3:C:192:LEU:HD21	1.73	0.71
1:A:884:TRP:HA	1:A:887:VAL:HG22	1.73	0.70
1:A:481:SER:HB2	1:A:521:PHE:H	1.56	0.70
1:A:435:VAL:HG13	1:A:456:GLU:HG2	1.74	0.69
1:A:146:THR:HB	1:A:191:LEU:HD22	1.74	0.69
2:B:145:LEU:HD13	2:B:218:VAL:HG11	1.74	0.69
3:C:165:TRP:NE1	3:C:196:LEU:HB2	2.08	0.68
2:B:188:VAL:HG11	3:C:152:LEU:HD22	1.76	0.67
1:A:595:VAL:HG23	1:A:671:MET:HG2	1.77	0.67
1:A:619:ARG:HH12	1:A:682:ARG:HH11	1.42	0.66
2:B:166:LEU:HD21	2:B:189:VAL:HG21	1.77	0.66
1:D:716:ALA:HB1	1:D:757:HIS:HB2	1.76	0.66
1:D:672:ARG:HD3	1:D:676:ARG:HH21	1.61	0.66
1:A:709:TRP:CD1	1:A:712:ARG:HD3	2.31	0.66
1:A:119:GLN:HB3	1:A:152:MET:HE3	1.77	0.65
1:A:477:PRO:HD3	1:A:869:LEU:HD21	1.78	0.65
2:G:207:HIS:CD2	2:G:209:PRO:HD2	2.31	0.65
1:D:389:LYS:HE3	1:D:400:PRO:HB2	1.77	0.65
2:B:159:VAL:HG22	2:B:205:VAL:HG22	1.77	0.65
3:H:28:SER:HB3	3:H:122:GLU:HG2	1.80	0.64
2:G:20:LEU:HD22	2:G:116:VAL:HG11	1.79	0.64
1:D:619:ARG:NH2	1:D:682:ARG:HH11	1.94	0.64
1:A:58:ILE:HD11	1:A:371:VAL:HG23	1.80	0.64
1:A:95:MET:HE1	1:A:231:VAL:HG22	1.80	0.64
2:B:13:LEU:HD22	2:B:154:PRO:HG3	1.80	0.64
2:G:92:THR:HG23	2:G:117:THR:HA	1.78	0.64
1:A:712:ARG:HG2	1:A:729:ASP:OD2	1.98	0.64
1:D:119:GLN:OE1	1:D:230:SER:HA	1.97	0.64
3:C:64:LEU:HA	3:C:75:ILE:HG13	1.79	0.63
2:B:71:ILE:HG22	2:B:82:LEU:HA	1.80	0.63
1:A:483:ARG:NH1	1:A:522:GLU:OE2	2.32	0.63
3:H:156:PHE:HE1	3:H:159:ARG:HA	1.63	0.63
1:D:154:HIS:CD2	1:D:156:GLY:H	2.16	0.62
2:B:199:GLN:HE21	2:B:200:THR:N	1.96	0.62
1:D:522:GLU:OE1	1:D:522:GLU:N	2.33	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:631:MET:HG2	1:A:831:VAL:O	1.99	0.62
1:D:408:ARG:HH11	1:D:421:LEU:HG	1.64	0.62
1:D:717:ALA:HB3	1:D:725:VAL:HB	1.82	0.61
2:B:144:ALA:HB2	2:B:190:THR:HG22	1.82	0.61
1:D:621:ASP:HB3	1:D:678:SER:O	2.00	0.61
2:G:31:PHE:HA	2:G:36:TRP:CZ2	2.36	0.61
3:C:202:ASP:HA	3:C:205:LYS:HD2	1.83	0.61
1:D:684:VAL:HG11	1:D:760:HIS:O	2.01	0.60
1:A:527:VAL:HG22	1:A:551:VAL:HG22	1.83	0.60
1:A:250:ASP:OD2	1:A:254:LYS:NZ	2.35	0.60
2:B:23:THR:HG22	2:B:81:SER:HB3	1.84	0.60
1:D:527:VAL:HG22	1:D:551:VAL:HG22	1.84	0.60
1:D:859:GLU:HB3	1:D:862:ALA:HB3	1.82	0.60
1:D:845:LEU:HD22	1:D:852:ALA:HB3	1.83	0.60
1:D:173:LEU:O	1:D:177:THR:HG22	2.02	0.60
1:D:481:SER:HB2	1:D:521:PHE:H	1.65	0.60
1:D:622:VAL:O	1:D:626:VAL:HG23	2.03	0.59
3:C:110:THR:HG23	3:C:112:PRO:HD2	1.84	0.59
1:A:602:PHE:HD1	1:A:602:PHE:H	1.50	0.59
1:D:858:LEU:HA	1:D:867:ARG:HG2	1.84	0.59
2:B:143:ALA:HB2	2:B:193:SER:HB3	1.85	0.59
1:A:620:VAL:HG21	1:A:754:TYR:CE1	2.37	0.59
3:H:153:LEU:HD22	3:H:192:LEU:HB3	1.85	0.59
1:A:471:PRO:HD2	1:A:865:ALA:HB2	1.85	0.58
2:G:128:VAL:HG21	2:G:205:VAL:HG21	1.85	0.58
2:B:84:LEU:HD21	2:B:91:ASP:OD2	2.03	0.58
2:G:31:PHE:HA	2:G:36:TRP:HZ2	1.68	0.58
1:D:329:ALA:HA	1:D:360:ARG:HH22	1.67	0.58
1:D:418:GLU:OE1	1:D:418:GLU:HA	2.04	0.58
1:D:205:SER:HB3	1:D:380:ALA:O	2.03	0.58
2:B:40:ARG:HB3	2:B:50:ILE:HD11	1.86	0.58
1:D:833:PRO:HA	1:D:858:LEU:HB2	1.85	0.58
1:A:566:PRO:HB3	1:A:837:LEU:HD12	1.84	0.57
1:D:688:GLY:HA2	1:D:728:GLY:O	2.05	0.57
1:A:491:GLN:HB2	1:A:900:PRO:HG3	1.87	0.57
1:A:750:ILE:O	1:A:752:VAL:N	2.37	0.57
1:D:565:PHE:CZ	1:D:661:VAL:HG21	2.39	0.57
3:C:125:ARG:HD3	3:C:189:THR:HG22	1.87	0.57
1:D:408:ARG:HH12	1:D:420:GLU:HA	1.69	0.56
2:B:191:VAL:HG21	2:B:201:TYR:OH	2.05	0.56
2:G:216:LYS:HG2	2:G:217:LYS:N	2.21	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:817:VAL:HG21	1:D:841:VAL:HG22	1.87	0.56
1:A:74:TRP:CD2	1:A:235:PRO:HB3	2.41	0.56
2:B:55:HIS:CE1	2:B:56:SER:HG	2.23	0.56
2:B:86:SER:O	2:B:86:SER:OG	2.20	0.56
1:A:668:GLU:OE2	1:A:672:ARG:NH2	2.39	0.56
1:D:512:TRP:HB2	1:D:891:ALA:HB3	1.88	0.56
1:A:833:PRO:HA	1:A:858:LEU:HB2	1.87	0.56
3:H:130:PRO:HA	3:H:156:PHE:HB3	1.88	0.56
1:A:68:VAL:HG11	1:A:74:TRP:CE3	2.41	0.55
2:B:8:GLN:HE21	2:B:111:GLY:HA3	1.71	0.55
2:G:53:ILE:HD11	2:G:57:GLY:HA2	1.87	0.55
3:C:83:GLY:HA3	3:C:88:PHE:HA	1.88	0.55
3:H:180:VAL:HG22	3:H:192:LEU:HD12	1.89	0.55
3:C:17:GLU:HA	3:C:112:PRO:HG2	1.89	0.55
1:A:567:GLY:N	1:A:568:GLN:OE1	2.33	0.55
1:A:639:ARG:HD3	1:A:645:PRO:HD3	1.88	0.55
2:B:173:PHE:CD2	3:C:193:SER:HB3	2.41	0.55
2:B:220:PRO:O	2:B:221:LYS:HE2	2.06	0.55
1:D:631:MET:HG2	1:D:831:VAL:O	2.06	0.55
1:D:789:THR:HG21	1:D:793:LEU:HD13	1.89	0.55
3:C:151:CYS:HB2	3:C:165:TRP:CH2	2.42	0.54
2:G:123:THR:HB	2:G:154:PRO:HD3	1.89	0.54
3:C:154:ASN:ND2	3:C:155:ASN:OD1	2.40	0.54
1:D:607:VAL:HG11	2:G:30:SER:HB3	1.89	0.54
1:D:750:ILE:HG22	1:D:752:VAL:HG13	1.90	0.54
1:A:145:ASP:O	1:A:221:CYS:HB2	2.07	0.54
1:A:119:GLN:CB	1:A:152:MET:HE3	2.38	0.54
3:C:132:VAL:HG22	3:C:153:LEU:HD12	1.88	0.54
1:D:512:TRP:CB	1:D:891:ALA:HB3	2.38	0.54
2:B:126:PRO:HB3	2:B:152:TYR:HB3	1.89	0.54
1:A:677:ARG:HG3	1:A:678:SER:N	2.23	0.53
3:C:122:GLU:OE1	3:C:157:TYR:HE1	1.91	0.53
1:A:227:GLY:HA2	1:A:384:VAL:HG21	1.90	0.53
1:A:595:VAL:O	1:A:599:VAL:HG23	2.08	0.53
3:C:130:PRO:HD3	3:C:215:HIS:CD2	2.43	0.53
1:D:570:ALA:HB1	1:D:833:PRO:HD2	1.89	0.53
3:C:167:VAL:HG23	3:C:172:GLN:HG3	1.89	0.53
1:D:772:LEU:O	1:D:800:ALA:HB2	2.08	0.53
1:D:788:LEU:HD11	1:D:806:ASN:HA	1.90	0.53
1:D:58:ILE:HD11	1:D:371:VAL:HG23	1.89	0.53
1:D:607:VAL:CG1	2:G:30:SER:HB3	2.39	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:205:SER:HB3	1:A:380:ALA:O	2.09	0.53
3:C:17:GLU:HG3	3:C:114:THR:HG21	1.91	0.53
1:D:721:PRO:HG3	1:D:847:ASP:OD2	2.07	0.53
2:B:150:LYS:O	2:B:184:SER:HB2	2.07	0.53
1:D:370:SER:H	1:D:402:MET:HE3	1.74	0.52
3:H:156:PHE:CE1	3:H:159:ARG:HA	2.43	0.52
1:D:367:LEU:HD23	1:D:399:VAL:HG21	1.91	0.52
3:H:110:THR:CG2	3:H:112:PRO:HD2	2.38	0.52
2:B:32:SER:HA	2:B:55:HIS:HD2	1.75	0.52
1:D:512:TRP:NE1	1:D:890:ARG:HA	2.25	0.52
1:A:540:ARG:HG3	1:A:540:ARG:HH11	1.74	0.52
1:D:740:CYS:C	1:D:742:GLY:N	2.63	0.52
1:D:477:PRO:HG3	1:D:869:LEU:HD11	1.91	0.52
1:D:750:ILE:O	1:D:752:VAL:HG22	2.10	0.52
2:G:61:TYR:CE2	2:G:71:ILE:HG12	2.45	0.52
2:G:20:LEU:HB3	2:G:84:LEU:HB3	1.92	0.52
1:D:298:GLN:HG3	1:D:300:GLY:N	2.24	0.52
2:G:47:LEU:HD12	2:G:47:LEU:H	1.75	0.52
1:A:240:GLU:O	1:A:244:GLN:HG3	2.10	0.51
2:G:74:ASP:CG	2:G:77:LYS:HG3	2.31	0.51
2:G:172:THR:HG22	2:G:185:LEU:HD21	1.92	0.51
3:C:167:VAL:HG12	3:C:206:HIS:CD2	2.45	0.51
3:C:157:TYR:CD1	3:C:158:PRO:HA	2.45	0.51
1:D:684:VAL:HG12	1:D:684:VAL:O	2.10	0.51
2:G:16:PRO:HD3	2:G:119:SER:O	2.11	0.51
2:G:33:GLY:O	2:G:34:TYR:HD1	1.93	0.51
1:A:53:ARG:HD3	1:A:56:GLU:OE1	2.10	0.51
1:A:684:VAL:HG21	1:A:760:HIS:O	2.10	0.51
1:D:566:PRO:HD2	1:D:631:MET:SD	2.50	0.51
1:A:340:GLY:HA2	1:A:345:ASP:OD2	2.11	0.51
2:B:207:HIS:CE1	2:B:209:PRO:HG2	2.45	0.51
1:A:481:SER:CB	1:A:521:PHE:H	2.22	0.51
3:C:134:ILE:HB	3:C:224:LYS:HB3	1.92	0.51
1:D:277:LEU:HD21	1:D:458:PRO:HG2	1.93	0.51
1:D:712:ARG:O	1:D:728:GLY:HA3	2.11	0.51
1:D:490:ALA:O	1:D:494:ARG:HG3	2.10	0.50
1:D:562:VAL:HG11	1:D:820:LEU:HD13	1.91	0.50
1:A:709:TRP:CZ3	1:A:735:GLU:HG2	2.47	0.50
2:B:23:THR:HA	2:B:81:SER:HA	1.92	0.50
2:G:119:SER:OG	2:G:120:SER:N	2.43	0.50
1:A:765:ARG:O	1:A:766:ASP:C	2.48	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:98:GLU:OE1	3:C:98:GLU:N	2.27	0.50
1:A:36:ALA:HB1	1:A:287:VAL:HG13	1.92	0.50
2:B:191:VAL:HG21	2:B:201:TYR:CE2	2.47	0.50
3:H:180:VAL:HA	3:H:192:LEU:HA	1.94	0.50
1:D:33:GLU:OE2	1:D:276:ARG:HB3	2.12	0.50
1:A:628:PHE:O	1:A:632:VAL:HG13	2.11	0.50
2:B:14:LEU:O	2:B:118:VAL:HA	2.12	0.50
1:A:621:ASP:HA	1:A:678:SER:HB2	1.94	0.49
3:C:184:ASP:HB3	3:C:187:ASP:OD1	2.12	0.49
1:D:672:ARG:O	1:D:676:ARG:HG3	2.12	0.49
1:A:596:LEU:HD21	1:A:602:PHE:CE2	2.47	0.49
1:A:875:ALA:HB1	1:A:880:VAL:HB	1.94	0.49
2:B:42:PRO:HB2	2:B:45:LYS:HB2	1.94	0.49
1:A:74:TRP:CD1	1:A:74:TRP:N	2.80	0.49
1:A:620:VAL:HG21	1:A:754:TYR:HE1	1.78	0.49
1:A:673:VAL:HG22	1:A:772:LEU:HG	1.95	0.49
2:B:126:PRO:HB2	2:B:149:VAL:HG13	1.95	0.49
1:D:146:THR:HB	1:D:191:LEU:HD22	1.94	0.49
3:H:125:ARG:NH2	3:H:128:ALA:HB2	2.28	0.49
3:H:155:ASN:HA	3:H:190:TYR:O	2.12	0.49
1:A:154:HIS:CE1	1:A:156:GLY:H	2.30	0.49
3:C:50:LEU:HD22	3:C:88:PHE:CG	2.48	0.49
2:G:36:TRP:HB3	2:G:80:PHE:CE1	2.48	0.49
3:H:30:SER:O	3:H:33:GLU:HG3	2.12	0.49
2:B:129:PHE:CE2	3:C:141:GLN:HG3	2.48	0.49
1:D:296:VAL:HA	1:D:449:ASN:O	2.12	0.49
3:C:181:THR:HG23	3:C:182:GLU:O	2.13	0.48
3:C:215:HIS:CD2	3:C:217:GLY:H	2.31	0.48
2:G:152:TYR:OH	2:G:185:LEU:HB2	2.13	0.48
1:A:516:ARG:HH11	1:A:516:ARG:CG	2.25	0.48
2:B:130:PRO:O	2:B:131:LEU:HD23	2.14	0.48
1:D:101:PHE:CD1	1:D:121:ARG:HB3	2.49	0.48
1:D:253:CYS:O	1:D:255:PRO:HD3	2.14	0.48
1:D:572:TRP:CD2	1:D:860:ARG:HA	2.49	0.48
3:C:77:ASP:OD1	3:C:77:ASP:N	2.47	0.48
3:C:166:LYS:HD3	3:C:171:LEU:HD22	1.94	0.48
2:G:40:ARG:HB3	2:G:50:ILE:HD11	1.95	0.48
1:A:580:LEU:N	1:A:581:PRO:CD	2.77	0.48
1:A:709:TRP:HD1	1:A:712:ARG:HD3	1.78	0.48
1:D:697:ARG:NH2	1:D:718:VAL:HG21	2.29	0.48
1:A:38:VAL:O	1:A:134:ALA:HA	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:481:SER:CB	1:D:521:PHE:H	2.26	0.48
2:G:93:ALA:HB3	2:G:95:TYR:CE1	2.48	0.48
2:G:155:GLU:HG3	2:G:183:TYR:CD2	2.49	0.48
3:H:124:LYS:HA	3:H:157:TYR:OH	2.13	0.48
1:A:250:ASP:OD1	1:A:252:ARG:NH1	2.47	0.48
1:D:648:VAL:HG21	1:D:662:ALA:HB2	1.96	0.48
1:A:572:TRP:CH2	1:A:575:MET:HA	2.49	0.48
1:A:587:GLU:HG2	2:B:101:ARG:HG3	1.95	0.48
1:D:732:ALA:HA	1:D:735:GLU:HG3	1.96	0.48
3:H:20:LEU:HD11	3:H:107:GLN:H	1.79	0.47
3:C:125:ARG:HG2	3:C:157:TYR:CG	2.49	0.47
1:A:72:ARG:HG2	1:A:907:TRP:CZ2	2.49	0.47
1:A:595:VAL:O	1:A:598:GLU:HG3	2.14	0.47
1:A:602:PHE:CE2	1:A:622:VAL:HA	2.49	0.47
2:B:172:THR:HG23	2:B:187:SER:HB2	1.97	0.47
1:A:250:ASP:HB3	1:A:252:ARG:H	1.78	0.47
1:A:596:LEU:HD21	1:A:602:PHE:CD2	2.50	0.47
1:A:673:VAL:O	1:A:677:ARG:HB3	2.14	0.47
1:A:884:TRP:CE3	1:A:887:VAL:HG21	2.50	0.47
1:D:851:ASP:OD1	1:D:851:ASP:N	2.31	0.47
2:G:20:LEU:HD21	2:G:116:VAL:HG21	1.95	0.47
2:B:53:ILE:HD12	2:B:59:THR:HG22	1.97	0.47
1:D:294:SER:HB2	1:D:452:VAL:HG22	1.95	0.47
1:D:505:ILE:HD11	1:D:894:VAL:CG1	2.42	0.47
1:D:696:GLY:O	1:D:700:VAL:HG23	2.15	0.47
1:D:740:CYS:C	1:D:742:GLY:H	2.18	0.47
1:A:296:VAL:HA	1:A:449:ASN:O	2.15	0.47
1:A:858:LEU:HD13	1:A:863:GLY:HA2	1.96	0.47
2:G:153:PHE:HA	2:G:154:PRO:O	2.14	0.47
1:D:672:ARG:HD3	1:D:676:ARG:NH2	2.29	0.47
1:D:727:ALA:HB1	1:D:755:ALA:HB1	1.97	0.47
1:D:127:THR:HG23	1:D:225:VAL:HG11	1.96	0.46
1:A:619:ARG:O	1:A:622:VAL:HG22	2.16	0.46
1:A:772:LEU:O	1:A:800:ALA:HB2	2.16	0.46
2:B:104:SER:O	3:C:108:TYR:HB2	2.16	0.46
2:G:208:LYS:HB2	2:G:209:PRO:HD3	1.97	0.46
3:H:111:SER:HB3	3:H:112:PRO:HD3	1.98	0.46
1:A:101:PHE:CD1	1:A:121:ARG:HB3	2.50	0.46
1:A:505:ILE:HD11	1:A:894:VAL:HG11	1.97	0.46
2:B:201:TYR:O	2:B:218:VAL:HG12	2.16	0.46
1:A:478:VAL:HA	4:A:1005:HOH:O	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:211:CYS:O	3:C:223:THR:HA	2.15	0.46
1:A:855:LEU:HD21	1:A:878:ARG:HG3	1.98	0.46
1:A:712:ARG:O	1:A:713:LEU:HD23	2.16	0.46
1:D:512:TRP:HE1	1:D:890:ARG:HA	1.80	0.46
1:D:572:TRP:CZ3	1:D:861:ASP:N	2.76	0.46
1:D:497:ASP:OD1	1:D:540:ARG:NH2	2.32	0.46
2:G:13:LEU:HD22	2:G:154:PRO:HG3	1.97	0.46
1:A:128:TRP:NE1	1:A:132:GLU:OE2	2.46	0.45
1:A:680:ALA:HB1	1:A:764:VAL:HG11	1.98	0.45
3:C:111:SER:OG	3:C:112:PRO:HD3	2.15	0.45
3:C:153:LEU:HD23	3:C:192:LEU:HB3	1.97	0.45
2:G:154:PRO:C	2:G:156:PRO:HD3	2.35	0.45
1:A:206:LEU:HD13	1:A:452:VAL:HG23	1.98	0.45
1:A:358:LYS:HA	1:A:358:LYS:HD3	1.74	0.45
1:A:688:GLY:H	1:A:730:ALA:HB2	1.82	0.45
1:D:270:ALA:HB1	1:D:384:VAL:HG12	1.97	0.45
2:G:124:LYS:HD3	2:G:125:GLY:H	1.80	0.45
3:C:78:ARG:NH1	4:C:301:HOH:O	2.23	0.45
1:D:469:MET:O	1:D:470:LEU:HB2	2.15	0.45
1:D:477:PRO:HD3	1:D:869:LEU:HD21	1.98	0.45
1:D:678:SER:O	1:D:681:VAL:HG12	2.16	0.45
1:A:801:GLY:O	1:A:805:ARG:HG3	2.16	0.45
1:D:168:VAL:HG11	1:D:908:LEU:HD11	1.98	0.45
2:B:47:LEU:HD12	2:B:47:LEU:H	1.81	0.45
2:B:191:VAL:HG21	2:B:201:TYR:CZ	2.52	0.45
1:D:119:GLN:HB2	1:D:152:MET:HE3	1.97	0.45
1:D:737:LEU:HD11	1:D:749:ALA:HB2	1.98	0.45
1:D:828:PHE:HB2	1:D:854:VAL:HG13	1.99	0.45
2:G:152:TYR:CE1	2:G:183:TYR:HB2	2.51	0.45
3:C:20:LEU:HD21	3:C:107:GLN:HG2	1.99	0.45
3:C:165:TRP:CG	3:C:196:LEU:HD22	2.51	0.45
2:B:88:THR:OG1	2:B:89:ALA:N	2.50	0.45
1:D:691:LEU:CD1	1:D:726:VAL:HB	2.47	0.45
1:A:669:ASP:O	1:A:673:VAL:HG23	2.18	0.44
1:D:433:ASP:OD1	1:D:433:ASP:N	2.50	0.44
1:D:572:TRP:CD1	1:D:575:MET:HB3	2.53	0.44
1:D:697:ARG:CZ	1:D:718:VAL:HG21	2.47	0.44
1:A:607:VAL:HG22	1:A:608:LEU:HD23	1.99	0.44
2:B:3:GLN:NE2	2:B:4:VAL:O	2.50	0.44
1:A:119:GLN:OE1	1:A:230:SER:HA	2.17	0.44
2:B:115:LEU:HD12	2:B:116:VAL:H	1.83	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:440:VAL:O	1:D:451:HIS:HA	2.16	0.44
1:D:619:ARG:HG3	1:D:622:VAL:HG12	1.98	0.44
3:H:111:SER:CB	3:H:112:PRO:HD3	2.48	0.44
2:B:91:ASP:N	2:B:91:ASP:OD1	2.50	0.44
3:C:193:SER:O	3:C:193:SER:OG	2.35	0.44
1:D:596:LEU:O	1:D:600:ALA:N	2.51	0.44
1:D:761:VAL:C	1:D:763:PRO:HD2	2.37	0.44
2:G:68:ARG:HE	2:G:68:ARG:HB2	1.55	0.44
1:A:548:VAL:HG12	1:A:549:PRO:O	2.17	0.44
3:C:157:TYR:CG	3:C:158:PRO:HA	2.52	0.44
1:D:621:ASP:HA	1:D:678:SER:OG	2.17	0.44
1:D:677:ARG:HH21	1:D:806:ASN:ND2	2.16	0.44
3:H:52:TRP:HB2	3:H:65:MET:HB2	1.98	0.44
1:D:174:THR:O	1:D:180:VAL:HG11	2.17	0.44
1:D:516:ARG:HG3	1:D:516:ARG:HH11	1.82	0.44
1:D:759:ALA:O	1:D:762:GLU:HG3	2.18	0.44
2:G:20:LEU:HD12	2:G:21:SER:H	1.83	0.44
1:A:402:MET:HE3	1:A:404:CYS:SG	2.58	0.44
1:D:408:ARG:HD2	1:D:414:TRP:CZ2	2.52	0.44
1:D:678:SER:HA	1:D:681:VAL:HG12	1.99	0.44
1:D:757:HIS:HA	1:D:808:ARG:O	2.18	0.44
1:D:693:VAL:HG13	1:D:745:ILE:CD1	2.48	0.44
3:H:156:PHE:HE2	3:H:192:LEU:H	1.66	0.44
2:B:36:TRP:HB3	2:B:80:PHE:CZ	2.52	0.43
3:C:165:TRP:CZ3	3:C:211:CYS:HB2	2.53	0.43
1:A:607:VAL:O	1:A:608:LEU:C	2.56	0.43
3:C:215:HIS:CG	3:C:216:GLN:N	2.86	0.43
3:H:30:SER:OG	3:H:33:GLU:OE2	2.30	0.43
1:A:762:GLU:N	1:A:763:PRO:HD2	2.32	0.43
2:B:7:GLN:HG3	2:B:27:TYR:CE1	2.53	0.43
1:D:540:ARG:HG3	1:D:540:ARG:HH11	1.83	0.43
1:D:736:PHE:O	1:D:739:TYR:HB3	2.19	0.43
2:G:40:ARG:NH2	2:G:91:ASP:HA	2.32	0.43
2:G:157:VAL:HG23	2:G:207:HIS:CD2	2.54	0.43
2:G:105:SER:OG	2:G:106:SER:N	2.51	0.43
1:A:561:SER:OG	1:A:827:THR:HB	2.19	0.43
1:D:509:ASP:HB3	1:D:894:VAL:HG13	2.00	0.43
3:H:153:LEU:O	3:H:156:PHE:HD2	2.02	0.43
1:D:313:GLN:OE1	1:D:348:GLU:HA	2.19	0.43
1:A:369:GLY:HA2	1:A:402:MET:HE2	2.01	0.43
1:A:470:LEU:HD21	1:A:868:PHE:HB3	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:20:LEU:HD11	2:B:22:LEU:HD21	2.00	0.43
2:B:146:GLY:HA2	2:B:161:TRP:CZ2	2.54	0.43
2:B:159:VAL:HG11	2:B:187:SER:CB	2.48	0.43
1:D:814:HIS:CE1	1:D:844:THR:HG23	2.53	0.43
2:B:53:ILE:CD1	2:B:73:VAL:HG13	2.48	0.43
1:D:114:LEU:HG	1:D:908:LEU:HG	2.00	0.43
1:D:210:HIS:HD1	1:D:294:SER:HG	1.62	0.43
1:D:630:VAL:O	1:D:634:LEU:HG	2.18	0.43
1:A:908:LEU:HD23	1:A:908:LEU:HA	1.66	0.43
1:D:394:LEU:HD13	1:D:456:GLU:HA	2.00	0.43
1:D:619:ARG:HH22	1:D:682:ARG:NH1	2.04	0.43
3:H:130:PRO:O	3:H:131:SER:C	2.57	0.43
2:B:54:ASN:OD1	2:B:58:SER:OG	2.35	0.43
3:H:40:ARG:HA	3:H:86:THR:O	2.18	0.43
1:A:522:GLU:N	1:A:522:GLU:OE1	2.51	0.42
3:C:178:GLU:OE1	3:C:192:LEU:HD11	2.18	0.42
1:D:360:ARG:HH21	1:D:363:SER:HB2	1.84	0.42
3:C:40:ARG:HA	3:C:86:THR:O	2.18	0.42
1:D:572:TRP:CE2	1:D:860:ARG:HA	2.54	0.42
2:G:128:VAL:HB	2:G:214:VAL:HG11	2.01	0.42
1:A:653:GLN:HB3	1:A:677:ARG:CZ	2.50	0.42
2:B:208:LYS:HD2	2:B:208:LYS:HA	1.88	0.42
1:D:630:VAL:HG11	1:D:833:PRO:HG3	2.00	0.42
2:G:155:GLU:HG3	2:G:183:TYR:CG	2.54	0.42
3:H:84:SER:O	3:H:85:GLY:C	2.57	0.42
1:A:457:PRO:HA	1:A:458:PRO:HD3	1.94	0.42
2:G:10:GLY:HA3	2:G:22:LEU:HD23	2.02	0.42
2:G:9:TRP:CH2	2:G:25:ALA:HB2	2.55	0.42
2:G:46:GLY:HA2	3:H:104:PHE:CE1	2.54	0.42
1:A:786:SER:HB2	1:A:793:LEU:HD22	2.02	0.42
1:D:36:ALA:HB1	1:D:287:VAL:HG13	2.02	0.42
1:D:471:PRO:HD2	1:D:865:ALA:HB2	2.01	0.42
3:H:20:LEU:HD11	3:H:107:GLN:N	2.35	0.42
1:D:732:ALA:O	1:D:735:GLU:HB2	2.20	0.42
1:A:884:TRP:O	1:A:888:LEU:HB2	2.19	0.42
1:D:303:ASN:O	1:D:307:ALA:HB2	2.20	0.42
1:D:691:LEU:HD11	1:D:726:VAL:HB	2.01	0.42
2:G:66:LYS:HB2	2:G:66:LYS:HE2	1.55	0.42
3:H:180:VAL:HA	3:H:191:SER:O	2.19	0.42
1:A:765:ARG:O	1:A:767:GLU:N	2.52	0.42
1:A:883:ASP:O	1:A:884:TRP:HB2	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:151:ASP:HB3	2:B:182:LEU:HD13	2.02	0.42
1:D:467:ARG:HD3	3:H:49:TYR:CZ	2.54	0.42
1:A:759:ALA:O	1:A:762:GLU:HG3	2.20	0.42
1:A:127:THR:HG21	1:A:185:ILE:HG21	2.02	0.41
2:G:214:VAL:HG13	2:G:216:LYS:HB3	2.02	0.41
2:B:36:TRP:HB3	2:B:80:PHE:CE1	2.56	0.41
2:B:159:VAL:HG11	2:B:187:SER:HB3	2.02	0.41
1:D:139:GLU:CD	1:D:519:GLN:HG3	2.41	0.41
1:D:189:LEU:HB2	1:D:191:LEU:HG	2.01	0.41
2:G:14:LEU:HD21	2:G:20:LEU:HA	2.01	0.41
1:A:126:THR:HG21	1:A:269:SER:HB3	2.03	0.41
1:D:467:ARG:HD2	3:H:109:GLY:HA2	2.02	0.41
1:D:408:ARG:NH1	1:D:421:LEU:H	2.19	0.41
1:A:681:VAL:O	1:A:682:ARG:C	2.58	0.41
1:A:740:CYS:HB3	1:A:745:ILE:O	2.21	0.41
1:A:750:ILE:HG22	1:A:752:VAL:HG13	2.01	0.41
1:D:206:LEU:HG	1:D:383:GLY:HA3	2.02	0.41
2:G:40:ARG:HH21	2:G:91:ASP:HA	1.86	0.41
2:G:173:PHE:HB3	3:H:179:SER:OG	2.20	0.41
1:A:188:VAL:HG12	1:A:189:LEU:HD13	2.01	0.41
3:C:183:GLN:HB2	3:C:190:TYR:CE1	2.55	0.41
1:D:801:GLY:O	1:D:805:ARG:HG3	2.20	0.41
3:H:110:THR:O	3:H:111:SER:C	2.58	0.41
1:A:752:VAL:HB	1:A:754:TYR:CE1	2.56	0.41
3:C:153:LEU:HD21	3:C:163:VAL:HG11	2.03	0.41
1:D:769:VAL:HA	1:D:800:ALA:HB1	2.02	0.41
2:G:47:LEU:HD21	3:H:61:PRO:HG2	2.03	0.41
2:B:145:LEU:HD21	2:B:201:TYR:HD2	1.86	0.41
2:B:208:LYS:N	2:B:209:PRO:HD2	2.36	0.41
3:C:125:ARG:CD	3:C:189:THR:HG22	2.50	0.41
1:D:428:TRP:O	1:D:430:PRO:HD3	2.21	0.41
3:H:56:LYS:HE2	3:H:56:LYS:HB2	1.89	0.41
1:A:425:VAL:O	1:A:426:ARG:HD3	2.20	0.41
1:A:716:ALA:HB1	1:A:757:HIS:HB2	2.03	0.41
3:C:210:ALA:HA	3:C:225:SER:HA	2.03	0.41
2:G:154:PRO:HD2	2:G:209:PRO:HB2	2.03	0.41
2:G:71:ILE:HA	2:G:81:SER:O	2.21	0.40
1:A:105:PHE:CD1	1:A:483:ARG:HG3	2.57	0.40
2:B:201:TYR:HD1	2:B:201:TYR:HA	1.58	0.40
1:D:669:ASP:O	1:D:673:VAL:HG23	2.22	0.40
1:A:360:ARG:O	1:A:363:SER:OG	2.37	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:489:ARG:HG2	1:A:542:VAL:O	2.22	0.40
2:B:146:GLY:HA2	2:B:161:TRP:CH2	2.56	0.40
3:H:28:SER:HB3	3:H:122:GLU:CG	2.50	0.40
1:D:463:VAL:HG22	1:D:464:PRO:HD2	2.04	0.40
1:D:739:TYR:CD1	1:D:739:TYR:C	2.94	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	832/932 (89%)	773 (93%)	54 (6%)	5 (1%)	25	50
1	D	836/932 (90%)	772 (92%)	59 (7%)	5 (1%)	25	50
2	B	206/249 (83%)	189 (92%)	17 (8%)	0	100	100
2	G	157/249 (63%)	140 (89%)	15 (10%)	2 (1%)	12	30
3	C	201/231 (87%)	183 (91%)	18 (9%)	0	100	100
3	H	138/231 (60%)	124 (90%)	12 (9%)	2 (1%)	11	28
All	All	2370/2824 (84%)	2181 (92%)	175 (7%)	14 (1%)	25	50

All (14) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	G	156	PRO
3	H	154	ASN
1	A	600	ALA
1	A	603	SER
3	H	85	GLY
1	D	600	ALA
1	D	603	SER

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Mol	Chain	Res	Type
1	A	751	PRO
1	A	765	ARG
1	D	470	LEU
1	A	766	ASP
1	D	566	PRO
1	D	751	PRO
2	G	154	PRO

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	605/690 (88%)	565 (93%)	40 (7%)	16 38
1	D	606/690 (88%)	546 (90%)	60 (10%)	8 18
2	B	180/206 (87%)	159 (88%)	21 (12%)	5 12
2	G	141/206 (68%)	117 (83%)	24 (17%)	2 5
3	C	173/199 (87%)	156 (90%)	17 (10%)	8 18
3	H	116/199 (58%)	104 (90%)	12 (10%)	7 16
All	All	1821/2190 (83%)	1647 (90%)	174 (10%)	8 19

All (174) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	33	GLU
1	A	64	SER
1	A	169	ASP
1	A	243	ARG
1	A	250	ASP
1	A	269	SER
1	A	278	SER
1	A	285	ARG
1	A	286	ARG
1	A	363	SER
1	A	371	VAL

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Mol	Chain	Res	Type
1	A	377	HIS
1	A	405	ARG
1	A	429	SER
1	A	433	ASP
1	A	461	GLU
1	A	470	LEU
1	A	488	LEU
1	A	553	THR
1	A	558	ASP
1	A	578	GLU
1	A	598	GLU
1	A	602	PHE
1	A	604	VAL
1	A	606	GLU
1	A	649	ILE
1	A	671	MET
1	A	677	ARG
1	A	682	ARG
1	A	687	ARG
1	A	691	LEU
1	A	692	SER
1	A	748	ARG
1	A	766	ASP
1	A	769	VAL
1	A	772	LEU
1	A	798	LEU
1	A	822	ASP
1	A	840	SER
1	A	888	LEU
2	B	8	GLN
2	B	9	TRP
2	B	14	LEU
2	B	55	HIS
2	B	65	LEU
2	B	75	THR
2	B	86	SER
2	B	87	VAL
2	B	88	THR
2	B	91	ASP
2	B	101	ARG
2	B	117	THR
2	B	123	THR

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Mol	Chain	Res	Type
2	B	142	THR
2	B	150	LYS
2	B	168	SER
2	B	179	SER
2	B	184	SER
2	B	186	SER
2	B	198	THR
2	B	204	ASN
3	C	34	ARG
3	C	50	LEU
3	C	62	ARG
3	C	65	MET
3	C	69	SER
3	C	71	ARG
3	C	77	ASP
3	C	110	THR
3	C	125	ARG
3	C	142	LEU
3	C	159	ARG
3	C	193	SER
3	C	194	SER
3	C	207	LYS
3	C	220	SER
3	C	224	LYS
3	C	225	SER
1	D	30	LEU
1	D	33	GLU
1	D	64	SER
1	D	70	ASP
1	D	145	ASP
1	D	165	GLU
1	D	174	THR
1	D	177	THR
1	D	196	LEU
1	D	215	SER
1	D	240	GLU
1	D	242	SER
1	D	281	ARG
1	D	298	GLN
1	D	316	VAL
1	D	353	LEU
1	D	360	ARG

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Mol	Chain	Res	Type
1	D	363	SER
1	D	367	LEU
1	D	377	HIS
1	D	390	VAL
1	D	416	SER
1	D	433	ASP
1	D	445	VAL
1	D	448	THR
1	D	468	ARG
1	D	469	MET
1	D	478	VAL
1	D	480	LEU
1	D	481	SER
1	D	531	ASP
1	D	572	TRP
1	D	597	SER
1	D	604	VAL
1	D	607	VAL
1	D	608	LEU
1	D	619	ARG
1	D	639	ARG
1	D	691	LEU
1	D	692	SER
1	D	697	ARG
1	D	710	THR
1	D	714	GLU
1	D	715	VAL
1	D	731	GLN
1	D	741	GLU
1	D	745	ILE
1	D	760	HIS
1	D	764	VAL
1	D	776	THR
1	D	798	LEU
1	D	807	LEU
1	D	815	SER
1	D	822	ASP
1	D	851	ASP
1	D	854	VAL
1	D	861	ASP
1	D	864	ASP
1	D	867	ARG

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Mol	Chain	Res	Type
1	D	888	LEU
2	G	3	GLN
2	G	23	THR
2	G	30	SER
2	G	32	SER
2	G	40	ARG
2	G	64	SER
2	G	66	LYS
2	G	68	ARG
2	G	72	SER
2	G	76	SER
2	G	85	SER
2	G	88	THR
2	G	103	SER
2	G	112	GLN
2	G	123	THR
2	G	157	VAL
2	G	158	THR
2	G	179	SER
2	G	185	LEU
2	G	211	ASN
2	G	213	LYS
2	G	214	VAL
2	G	216	LYS
2	G	217	LYS
3	H	17	GLU
3	H	26	THR
3	H	28	SER
3	H	30	SER
3	H	44	SER
3	H	50	LEU
3	H	69	SER
3	H	80	SER
3	H	110	THR
3	H	124	LYS
3	H	131	SER
3	H	162	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	3	GLN

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Mol	Chain	Res	Type
2	B	8	GLN
2	B	78	ASN
2	B	199	GLN
3	C	154	ASN
3	C	172	GLN
3	C	177	GLN
3	C	206	HIS
1	D	498	HIS
1	D	568	GLN
1	D	731	GLN
1	D	806	ASN
3	H	155	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	840/932 (90%)	0.08	26 (3%)	49	49	44, 66, 101, 133	0
1	D	846/932 (90%)	0.20	44 (5%)	27	25	43, 69, 120, 162	0
2	B	212/249 (85%)	0.47	17 (8%)	12	10	64, 95, 119, 154	0
2	G	165/249 (66%)	0.49	20 (12%)	4	3	68, 90, 139, 185	0
3	C	205/231 (88%)	0.52	23 (11%)	5	4	61, 93, 145, 150	0
3	H	144/231 (62%)	0.79	27 (18%)	1	0	70, 98, 141, 170	0
All	All	2412/2824 (85%)	0.26	157 (6%)	18	17	43, 75, 126, 185	0

All (157) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	C	222	VAL	5.4
1	D	713	LEU	5.2
3	H	181	THR	4.9
3	H	179	SER	4.7
2	G	216	LYS	4.7
3	H	180	VAL	4.7
3	H	153	LEU	4.6
1	A	168	VAL	4.5
1	A	165	GLU	4.4
3	C	204	GLU	4.3
3	C	171	LEU	4.3
3	C	208	LEU	4.2
3	H	130	PRO	4.2
2	G	173	PHE	4.1
1	D	686	GLY	4.1
3	C	165	TRP	4.0
3	H	178	GLU	4.0
3	H	161	ALA	4.0
2	B	3	GLN	3.9

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Mol	Chain	Res	Type	RSRZ
1	D	363	SER	3.9
3	C	166	LYS	3.9
2	G	203	CYS	3.8
2	B	29	GLY	3.8
2	B	63	PRO	3.7
1	D	731	GLN	3.7
2	B	153	PHE	3.6
1	D	733	ALA	3.6
2	B	191	VAL	3.6
3	C	223	THR	3.6
2	G	185	LEU	3.6
3	H	194	SER	3.5
3	C	156	PHE	3.5
3	H	151	CYS	3.4
3	H	129	ALA	3.4
2	G	129	PHE	3.4
1	D	738	GLU	3.4
1	D	732	ALA	3.3
2	B	192	PRO	3.3
1	D	197	THR	3.3
3	H	156	PHE	3.3
2	G	128	VAL	3.3
1	A	681	VAL	3.2
1	D	891	ALA	3.2
3	H	193	SER	3.2
1	D	737	LEU	3.2
3	H	192	LEU	3.1
2	G	156	PRO	3.1
1	D	753	ASP	3.1
1	A	303	ASN	3.1
1	A	169	ASP	3.1
1	A	732	ALA	3.1
1	D	714	GLU	3.1
1	D	198	VAL	3.0
3	C	167	VAL	3.0
1	A	729	ASP	3.0
1	A	162	PRO	3.0
3	C	147	ALA	3.0
3	C	209	TYR	3.0
1	D	166	ASP	3.0
1	D	754	TYR	2.9
1	A	380	ALA	2.9

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Mol	Chain	Res	Type	RSRZ
1	D	862	ALA	2.9
2	B	141	GLY	2.9
3	H	154	ASN	2.9
1	A	687	ARG	2.9
1	D	697	ARG	2.9
1	A	164	PRO	2.9
1	D	745	ILE	2.8
2	G	214	VAL	2.8
2	G	152	TYR	2.8
1	D	740	CYS	2.8
2	G	217	LYS	2.8
3	C	168	ASP	2.8
1	A	731	GLN	2.7
3	H	191	SER	2.7
1	D	741	GLU	2.7
1	D	755	ALA	2.7
1	D	199	ASP	2.7
1	A	736	PHE	2.7
3	H	190	TYR	2.7
2	B	133	PRO	2.7
3	H	152	LEU	2.7
1	D	204	SER	2.7
1	A	405	ARG	2.6
1	D	66	ALA	2.6
1	D	303	ASN	2.6
1	A	602	PHE	2.6
3	H	188	SER	2.6
2	B	198	THR	2.5
3	H	111	SER	2.5
1	D	201	ALA	2.5
2	G	158	THR	2.5
1	D	908	LEU	2.5
2	G	177	LEU	2.5
1	A	337	HIS	2.5
1	A	691	LEU	2.5
2	G	180	SER	2.5
1	D	598	GLU	2.4
1	D	380	ALA	2.4
1	A	198	VAL	2.4
2	G	182	LEU	2.4
1	D	463	VAL	2.4
3	H	131	SER	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	72	ARG	2.4
3	H	40	ARG	2.4
2	G	204	ASN	2.4
1	D	700	VAL	2.4
3	C	148	SER	2.3
1	D	150	VAL	2.3
3	C	169	ASN	2.3
1	D	760	HIS	2.3
2	B	165	ALA	2.3
2	G	175	ALA	2.3
2	G	215	ASP	2.3
1	D	736	PHE	2.3
1	D	742	GLY	2.2
3	H	155	ASN	2.2
2	B	152	TYR	2.2
2	B	182	LEU	2.2
3	C	130	PRO	2.2
1	D	200	THR	2.2
3	C	164	GLN	2.2
3	H	127	VAL	2.2
3	C	216	GLN	2.2
3	H	162	LYS	2.2
3	H	123	ILE	2.2
1	A	772	LEU	2.2
3	C	133	PHE	2.2
1	D	761	VAL	2.2
3	H	186	LYS	2.2
1	A	166	ASP	2.2
1	A	761	VAL	2.1
3	C	132	VAL	2.1
3	C	203	TYR	2.1
2	B	154	PRO	2.1
3	C	170	ALA	2.1
2	G	179	SER	2.1
1	D	726	VAL	2.1
1	D	709	TRP	2.1
1	D	735	GLU	2.1
1	A	167	GLY	2.1
2	B	118	VAL	2.1
3	C	213	VAL	2.1
2	B	77	LYS	2.1
2	B	194	SER	2.1

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Mol	Chain	Res	Type	RSRZ
1	D	888	LEU	2.0
1	D	162	PRO	2.0
1	A	598	GLU	2.0
1	A	733	ALA	2.0
3	C	211	CYS	2.0
2	G	171	HIS	2.0
2	G	172	THR	2.0
2	B	31	PHE	2.0
1	D	408	ARG	2.0
1	A	739	TYR	2.0
1	D	92	GLY	2.0
3	H	71	ARG	2.0

6.2 Non-standard residues in protein, DNA, RNA chains (i)

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.